

Bio-Diesel

Al Ebron

NAFTC Headquarters

What is Bio-diesel?

- # Bio-diesel is a methyl ester that can be produced from a wide range of vegetable oils, recycled cooking oils, and animal fats
- # Bio-diesel is made through a conventional chemical process
- # Bio-diesel in its pure form is called neat bio-diesel

Bio-diesel Raw Materials

Oil or Fat

Soybean

Corn

Rapeseed

Cottonseed

Sunflower

Beef tallow
hydroxide

Pork lard

Used cooking oils
(yellow grease), etc.

Alcohol

Methanol

Ethanol

Catalyst

Sodium hydroxide

Potassium

Attributes of Bio-diesel

- # Engine performance is similar to diesel
 - Similar torque, horsepower and mpg
- # Lubricity is improved over diesel
- # Reduces emissions, including particulate matter

Attributes of Bio-diesel

- # One bushel of soybean produces 1.5 gallons of bio-diesel
- # One gallon of bio-diesel contains 132,902 BTUs
- # France is the largest producer of bio-diesel

Bio-diesel Infrastructure

Infrastructure

- Blends completely with petro-diesel
 - No new fueling stations are required
 - Existing distribution system can be used (pipes, tanks, fueling stations)
 - Good solvent, may clean out system initially

Bio-diesel Infrastructure

Infrastructure

- Existing engines can be used
 - Neat biodiesel will degrade some types of natural rubber (special gaskets, hoses, etc. are needed)
 - Can attack some painted surfaces

Infrastructure - Distribution



Infrastructure - Refueling



Key Benefits of Bio-diesel

- # Reduces tailpipe emissions
- # Reduces dependency on foreign oil
- # Reduces carcinogenic pollutants
- # B20 reduces visible emissions 35%
- # A B20 blend increases lubricity 60%
- # Is an economical option for meeting
EPACT

Bio-diesel Fuel Use Credits

- # Each purchase of 450 gallons of neat biodiesel fuel (B100) is equivalent to 1 AFV credit.
- # Each purchase of 2,250 gallons of B20 is equivalent to 1 AFV credit.

Key Markets for Bio-diesel

Key Markets include:

- Mass transit
- Marine
- Heavy-Duty engines

Bio-diesel Transit Bus



Bio-diesel School Bus



Bio-diesel Utility Vehicles



Utility
Vehicles



Bio-diesel Marine Boat



Bio-diesel Yellowstone N. Park Truck



Current Users of Bio-diesel

(Presently over 50 fleets with 35 million road miles)

- # U.S. Department of Agriculture
- # General Services Administration
- # Department of Energy
- # Several National Parks
- # Numerous State Transportation Departments
- # U.S. Postal Service
- # School Districts
- # Transit Authorities
- # Numerous Utilities

Bio-diesel – A Domestic Fuel

- # Bio-diesel is “user-friendly”
- # A Renewable, domestic fuel
- # And can smell like French Fries

Thank You !!!

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